CONSTRUCTION OF SEA WALLS AND BREAKWATERS.

THIS subject, to which we alluded in our last, was renewed at a meeting of the Institution of Civil Engineers, on the 9th inst., in a paper by Mr. Scott Russell.

Although agreeing as a general proposition, with the truth of the observation, that it was impossible to lay down any one undeviating rule for a form of sea wall which should suit all cases,—the author had, from long and careful experiment, and examination of various localities, endeavoured to classify certain forms of artificial constructions, and to adapt them to certain cases, having reference in each case to the action of the waves to which they were to be exposed. His first process was to examine the action and character of the several kinds of waves, deducing as a given axiom, that,—First, the common form of waves is cycloidal. Second, the motion of the waves in a disturbed state is circular, and in a vertical plane. Third, the water near the top of a wave moves the same way as the wave itself. Fourth, the water in the hollow between the waves is receding. Fifth, the power of a wave is exactly in proportion to the height of its crest above the hollow between the waves. Sixth, the greatest power a wave can exert is at the moment of the crest breaking over into the hollow. Seventh, waves in the British seas have rarely been seen of a greater height than 27 feet above the hollow, and 32 feet may be taken as their greatest unbroken height; those of the Atlantic being stated to range higher. Eighth, waves have never been seen of the full depth of the water forming them, hence it is deduced that the greatest force waves can be exposed to may be determined by the depth of the water they are placed in. Ninth, there are two or more classes of waves,—wind-waves, short, high, and superficial; and storm-waves, which are long, low, and deep. Tenth, the depth of agitation caused by a wave is in the ratio of its height and length conjointly.

Reasoning upon these data, the paper then proceeded to examine two classes of hydraulic works. First, those which are designed to act upon the waves; and, second, those whose structures are exposed to the sea without any design of controlling it, but only to guide it under particular circumstances.

Of the first class are sea walls, piers, and other sea defences intended to restrain the action of the waves; for the forms of which a number of designs were given, ranging between the flat slope, with a foreshore, and the vertical wall. Of all these the preference was given to a wall having a concave or cycloidal curved face, to carry the wave up without breaking; overhanging coping curved on the underside to return the wave upon itself, and a recessed parapet on the outside to prevent the wave from being thrown inside. For breakwaters, whose object it was to resist the waves and produce still water within side, the best mode, under all circumstances of locality, variety of materials, and cost, appeared to be the depositing of the large and small materials, and allowing them to find their natural slope under the action of the waves.

Of the second class, are works designed to direct the scour at low water, but which are quite covered at high water; the foundations of lighthouses, &c.—the object being to oppose the least possible resistance to the waves, and to suffer the least from them. Groynes, embankments, and other works intended to be under high water, also coming under this class; the best form is the parabola with the foot curved outwards on each side—the apex being raised or lowered, and the base proportioned to its application. This form being extended upward approximates to that of the Eddystone, Bell-rock, and Skerry-vore lighthouses, which have withstood the action of heavy seas so successfully.

The vertical wall was condemned for many satisfactory reasons, the cost of workmanship, the expensive character of the materials, the liability to destruction, if a breach be made, and the unsatisfactory action in consequence of the waves making a clear breach over them in heavy weather.

In the discussion that ensued, many interesting illustrations were given of the truth of these positions, derived from the works at Whitehaven, those on the South Devon Coast, and those at Hartlepool, in which latter case the strong red marl, dry punned, mingled with small stone, and faced with pitching, had been satisfactorily employed at a very small cost for the construction of piers.

Correspondence.

PULPITS IN REFECTORIES.

SIR,—In your last week's paper a query appeared (page 121) in Professor Willis's account of conventual buildings at Canterbury, which said:—"A question was asked as to the uses of pulpits in refectories." In all Roman Catholic institutions of a collegiate nature, while the members are at meals, readings of a theological or other improving nature are always in use, as may be witnessed at Oscott College at this day.

A place like a pulpit or tribune was therefore no inappropriate appendage to the room in which refection took place. And this, I beg to suggest, is the reason why a pulpit is found in the old refectory at Canterbury.

I am, Sir, &c., W. MASON.

Neiton, March 16, 1847.

RUSSELL'S SPEEDY "LOUIS."

SIR,—I sent you, a few weeks back, a sketch and description of the above invention, which was inserted with some errors I intended to correct. First, its name "Lewis"—which should be "Louis," being either dedicated to, if not (as reported) invented by, that patron of arts Louis XIV. Secondly, the engraver, with a view to improve my drawing, has altered the shape of the ring from *an egg form* to a perfect *circle*, which would in its application destroy the important advantage mentioned; i. e. should the hole be cut *too large*, by reversing the smaller end, the dovetail is considerably extended. In your last week's number, a correspondent signed "J. James, Lambeth," asserts that he is the father of this invention, and, despite of my statement that it was designed, at the proportions given, for light weights only, "that he made lewises of the same kind in 1845, and tried them with some of the blocks of stone used at the British Museum weighing about *ten tons*, and that he abandoned the plan, as he considered there was a risk:" adding "lifting the stone 15 feet *we* surged it three times" (a very unmasonlike act), "and upon the last occasion the block slipped from the lewises, which he considered a failure." Mr. Farrer, who is the sole superintending mason at the works of the British Museum, and who has been so from its commencement, declares that *louises* of that description were never used or tried upon those works until he tried these for me and found them efficient to their purpose, but, like all novelties, they require to be rightly understood, as in the case of slight ashlar, when the stone is set, to remove the louis, the ring should be reversed to the side, in lieu of knocking it down with a hammer at the risk of flushing the stone, which was the only evil he saw; and that he deemed the principle was good for any weight, if made proportionate. I am, Sir, &c.,

H. H. RUSSELL.

THE LOUVRE.—A new plan has lately been proposed by M. Brunet de Baines for terminating the Louvre. All the plans hitherto submitted by architects have provided for the union of that magnificent edifice with the Palace of the Tuileries—a task of great scientific difficulty, on account of the two structures not being in a straight line. But the new proposition proposes to separate the two buildings, by putting the Rue de Richelieu in direct communication with the Pont des Saints Pères, leaving on one side the Tuileries, and erecting on the other the new Bibliothèque Royale. By this arrangement, the project now under consideration, of building a new opera-house on the Place du Palais Royal, would be set aside; and it is suggested to occupy the site of the projected theatre by a *château d'eau*, which would be of great utility in the event of fire. The space between the new street and the Tuileries is proposed to be laid out in a semi-circular form, and occupied with various useful buildings, harmonizing with the adjacent edifices. It is recommended that the new Bibliothèque shall be of the same style of architecture as the Louvre, with, however, a complete isolation.—*Galignani.*

Miscellanea.

VALUE OF PORTRAITS.—Perhaps, said the Rev. Sir J. Page Wood, in a lecture on painting delivered recently at the Chelmsford Literary Institution,—perhaps there are no representations which interest so strongly the curiosity of mankind as portraits; a high degree of pleasure, of which almost every one is susceptible, is experienced from contemplating the countenances of those men who, by their genius or their virtues, have been entitled to the esteem and admiration of future ages, who are the speaking records of mortals who have put on immortality. It is this power which brings before us the forms of the mighty and beautiful of past ages. From the pencil of Holbein we have the representation of the eighth Henry, and the lovely and speaking face of his victim wife, Anne Boleyn. By this art we gaze on the enthralling beauty of the Scottish Mary, the stern features of her reprover Knox, and the spirited countenance of the maiden Queen, and the galaxy of wit and learning which illuminated her court. From Vandyke we have the graceful and wilful Henrietta of France, and the portrait of the unhappy Charles. His image yet lives by the hand of that great master, undimmed by time, uninjured by accident; and at the distance of 200 years, men may gaze on that cold calm face, that proud but complaining eye, and compare the melancholy features with the mournful tale. In our own time, with what interest do we contemplate a faithful portrait of the veteran chief, who has made our name glorious over the whole world; of the patriot who has contested for our rights; of the statesman who strives to

> "Scatter plenty o'r a smiling land,
> And read his history in a nation's eyes."

DURHAM CATHEDRAL.—Many alterations have lately been made in this very interesting edifice. The masonry which separated the celebrated Galilee from the nave has been removed, so as to give an uninterrupted view of the whole of the building; the incongruous font has been taken away, and one of Norman character introduced; and the woodwork, which cut off from the transept the aisles on each side of the quire, has been taken down. The altar screen, too, has been restored, and the Norman chapter-house considerably improved. A writer in the *Athenæum* says, that the Chapter, which met on the 19th, resolved upon several alterations. The chief of these is the removal of the organ, and the screen on which it stands. At present, the organ stands over the entrance into the quire; it is soon to be placed under one of the arches on the north side of the quire, opposite to the bishop's throne. The present screen, with its unsightly and most inappropriate carvings of apples, melons, and onions, is to be taken down, and its place supplied by one the size, character, style, and material of which are all open for consideration. By this alteration, when completed, the visitor will be enabled to see the whole length of the building, (which is now interrupted by the organ,) and to grasp its proportions, so as to take in the symmetry of its component parts, and to understand it as a whole.

PROPOSED BRIDGE ACROSS THE THAMES.—An inquiry into the merits of the proposed bridge across the Thames, from Lambeth Church to Westminster, has taken place at the instance of the Commissioners of Woods and Forests. It appears that Sir Samuel Brown proposes to erect the structure, as a toll-bridge: it is to be on the suspension principle, and is estimated to cost 90,000*l.*

SOCIETY OF ANTIQUARIES.—The auditors, in their report on Thursday night last, made some strange revelations as to the financial condition of this ancient society. After a long discussion the report was ordered to be printed. The recent agitation is producing good fruit.

STATUE OF THE QUEEN DOWAGER.—It is proposed to erect a statue in the city, in honour of the Queen Dowager, by public subscription.

The Existing Remains of the Ancient Britons, within a small district between Lincoln and Stenford, described. By the Rev. G. Oliver, D.D. Spencer, 314, High Holborn.

THIS *brochure*, small as it is, is a valuable addition to topographical literature. British tumuli, the Drake stone, and Biard's leap, are the principal subjects discussed, and these are illustrated with much learning and taste.

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